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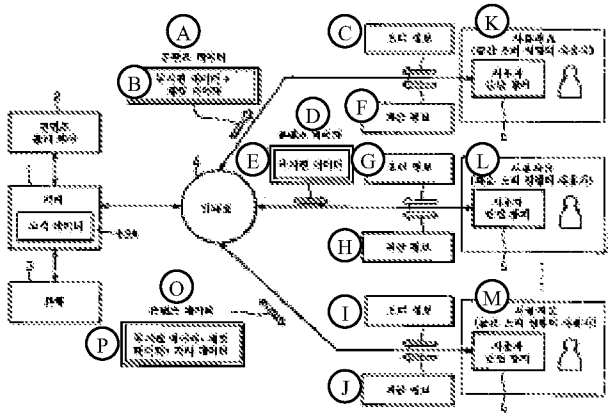
(54) SERVER DEVICE, SIGNAL DISTRIBUTION SYSTEM, SIGNAL DISTRIBUTION METHOD, AND TERMINAL UNIT

(57) Abstract

The present invention provides a COD (content on demand) system that not only manages the system utilization state (system utilization frequencies) of users such as download times and access time but can change the quality of contents that are transmitted from a server to the user in accordance with the system utilization frequencies of the users. Therefore, high-quality contents or high-function contents are provided to users with a high system utilization frequency. The contents that are provided to users are differentiated in accordance with the system utilization frequencies of the users, thus enabling activation of a network business.

Representative figure:



Key:
1 Server
2 Contents holder company
3 Bank
4 Internet
5 User terminal unit
13A Client data
A Contents data
B Musical data + jacket data

C Order information
D Contents data
E Musical data
F Accounting information
G Order information
H Accounting information
I Order information
J Accounting information
K User A (user with average propensity to consume)
L User B (user with low propensity to consume)
M User Z (user with high propensity to consume)
O Contents data
P Musical data + jacket data + lyrics data

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Claims

1. A server device, characterized in that in a server device, it includes a main data storage means for storing main data; a sub data storage means for storing sub data related to said main data stored in said main data storage means; a user information storage means for storing information intrinsic to users; a reception means for receiving information for identifying the users; a comparison means for comparing the user identification information received by said reception means with the user intrinsic information stored in said user information storage means; a discrimination means for discriminating the utilization frequencies of the users according to the comparison result of said comparison means; and a control means that transmits only the main data stored in said main data storage means or transmits the sub data stored in said sub data storage means along with the main data stored in said main data storage means according to the discrimination result of said discrimination means.

2. The server device as cited in Claim 1, characterized in that the main data stored in said main data storage means are audio data.

3. The server device as cited in Claim 1, characterized in that the sub data stored in said sub data storage means are at least one of jacket image, lyrics, record jacket comment notes (liner notes), and URL address.

4. The server device as cited in Claim 2, characterized in that the sub data stored in said sub data storage means are additional information items for improving the audio quality of said audio data stored as said main data.

5. The server device as cited in Claim 1, characterized in that the main data stored in said main data storage means are image data.

6. The server device as cited in Claim 5, characterized in that the sub data stored in said sub data storage means are additional information items for improving the image quality of said image data stored as said main data.

7. The server device as cited in Claim 1, characterized in that the main data stored in said main data storage means are game program data.

8. The server device as cited in Claim 7, characterized in that the sub data stored in said sub data storage means are additional information items for diversifying the story of said game programs stored as said main data.

9. The server device as cited in Claim 1, characterized in that the user intrinsic information stored in said user information storage means is at least one of access times, download times, access time, and download time.

10. A signal distribution system, characterized in that in a signal distribution system comprising an information center and several terminal units respectively accessed to said information center by a prescribed communication line, said information center includes a main

data storage means for storing main data; a sub data storage means for storing sub data related to said main data stored in said main data storage means; a user information storage means for storing information intrinsic to users; a reception means for receiving information for identifying the users; a comparison means for comparing the user identification information received by said reception means with the user intrinsic information stored in said user information storage means; a discrimination means for discriminating the utilization frequencies of the users according to the comparison result of said comparison means; and a control means that transmits only the main data stored in said main data storage means or transmits the sub data stored in said sub data storage means along with the main data stored in said main data storage means according to the discrimination result of said discrimination means.

11. The signal distribution system as cited in Claim 10, characterized in that the main data stored in said main data storage means are audio data.

12. The signal distribution system as cited in Claim 10, characterized in that the sub data stored in said sub data storage means are at least one of jacket image, lyrics, record jacket comment notes, and URL address.

13. The signal distribution system as cited in Claim 11, characterized in that the sub data stored in said sub data storage means are additional information items for improving the audio quality of said audio data stored as said main data.

14. The signal distribution system as cited in Claim 10, characterized in that the main data stored in said main data storage means are image data.

15. The signal distribution system as cited in Claim 14, characterized in that the sub data stored in said sub data storage means are additional information items for improving the image quality of said image data stored as said main data.

16. The signal distribution system as cited in Claim 10, characterized in that the main data stored in said main data storage means are game program data.

17. The signal distribution system as cited in Claim 16, characterized in that the sub data stored in said sub data storage means are additional information items for diversifying the story of said game programs stored as said main data.

18. The signal distribution system as cited in Claim 10, characterized in that the user intrinsic information stored in said user information storage means is at least one of access times, download times, access time, and download time.

19. Deleted

20. Deleted

Specification

Detailed explanation of the invention

Purpose of the invention

Technical field of the invention and prior art of the field

[0024]

The present invention relates to a signal distribution system accessed to a communication line of networks, a signal distribution method, and a terminal unit, and a server.

[0025]

Contents such as music, video sources, or game software are stored as digital data in a server. The contents can be downloaded from the server to a device accessed to the server by a public line such as the ISDN (Integrated Standard Digital Network), an analog telephone line, or a satellite communication line. This system is well known as a COD (Content On Demand) system.

[0026]

Figure 1 outlines a typical embodiment of the COD system.

[0027]

A server (1) receives contents, for example, video software such as music and movies and game software generated by a contents holder company (2). The server (1) converts the contents into digital data and stores the digital data as contents data.

[0028]

Since the server (1), for example, is accessed to user terminal units (5) possessed by worldwide users (A, B, …, and Z) through Internet (4), the server can communicate with the terminal units (5).

[0029]

The server (1) transmits a menu showing a contents list to a specific user terminal unit (5) accessed to the server (1). The specific user terminal unit (5) typically displays the menu received from the server (1) on a so-called browser screen, so that the user of the user terminal unit (5) can select desired contents from the menu according to a required operation procedure and download the selected contents to the user terminal unit (5) from the server (1). Next, the user of the user terminal unit (5) transmits a contents order to download the selected contents.

[0030]

In the implementation operation of the user to transmit the contents order, the user inputs a credit card number or bank account number and the authentication code of the user, which are accounting information of the user, to authenticate the user. Alternatively, the user may input the authentication code of a prepaid card purchased by the user as accounting information.

[0031]

The server (1) receives the contents order through the Internet (4) and authenticates the user by using data such as the authentication code included in the contents order.

[0032]

Multiple contents that are provided from the contents holder company (2) are stored as data in the server (1). If the user is authenticated as an approved user, the server (1) transmits the contents designated in the contents order to the user terminal (5). At that time, a payment is made by a bank (3) having a contract with the user. The payment is based on the accounting information included in the contents order.

[0033]

As mentioned above, the contents data transmitted from the server (1) are received by the user terminal unit (5) and stored in a recording medium provided for contents. In other words, the contents are downloaded to the user terminal unit (5) from the server (1).

[0034]

In this manner, the COD system in which a user can purchase desired contents and download the contents through a communication line can be constituted.

[0035]

On the other hand, in a general market in which products are sold in shops, a value added service such as a discount price or additive thank-you product is often provided to clients who frequently purchase products or purchase products so that the total sum of the purchases exceeds a prescribed value. In this manner, the purchase desire of the clients is stimulated, and the competition between shops is promoted, increasing the activity of the market.

[0036]

However, the aforementioned services do not exist in business transactions through a network that is implemented in the aforementioned COD system.

Technical problems to be solved by the invention

[0037]

The present invention is required from the aforementioned viewpoint, and the purpose of the present invention is to provide a server, a signal distribution system, a signal distribution method, and a terminal unit that can drive a market in a prosperous manner by providing services differentiated in accordance with the utilization frequency of a COD system, for instance.

[0038]

According to a first embodiment of the present invention, the present invention provides a server device that includes a main data storage means for storing main data; a sub data storage means for storing sub data related to the main data stored in the main data storage means; a user information storage means for storing information intrinsic to users; a reception means for receiving information for identifying the users; a comparison means for comparing the user identification information received by the reception means with the user intrinsic information stored in the user information storage means; a discrimination means for discriminating the utilization frequencies of the users according to the comparison result of the comparison means; and a control means that transmits only the main data stored in the main data storage means or transmits the sub data stored in the sub data storage means along with the main data stored in the main data storage means according to the discrimination result of the discrimination means.

[0039]

According to a second embodiment of the present invention, the present invention provides a signal distribution system comprising an information center and several terminal units respectively accessed to the information center by a prescribed communication line. The aforementioned information center includes a main data storage means for storing main data; a sub data storage means for storing sub data related to the main data stored in the main data storage means; a user information storage means for storing information intrinsic to users; a reception means for receiving information for identifying the users; a comparison means for comparing the user identification information received by the reception means with the user intrinsic information stored in the user information storage means; a discrimination means for discriminating the utilization frequencies of the users according to the comparison result of the comparison means; and a control means that transmits only the main data stored in the main data storage means or transmits the sub data stored in the sub data storage means along with the main data stored in the main data storage means according to the discrimination result of the discrimination means.

[0040]

According to a third embodiment of the present invention, the present invention provides a signal distribution method for signal distributing contents from an information center to multiple terminal units respectively accessed to the information center by a prescribed communication line. The aforementioned signal distribution method includes a step for receiving a user ID and a contents order from an optional terminal unit among the terminal units; a step for referring to client data stored in a memory that is used in the information center according to the user ID received by the reception step; a step for discriminating the utilization frequency based on the client data referred by the data reference step; and a step for discriminating whether or not additional data are added to the contents, which are transmitted to one terminal unit among the terminal units, in response to the contents order received from the terminal unit according to the utilization frequency discriminated by the utilization frequency distribution step.

[0041]

According to a fourth embodiment of the present invention, the present invention provides a terminal unit that can communicate with an information center through a communication line for connecting the terminal unit and the information center and can record data on a recording medium having multiple data recording areas or regenerate data from the recording medium. The aforementioned terminal unit includes a transmission means that transmits a user ID and a contents order for designating contents to the information center; a reception means that receives contents selected by the information center according to the user ID and the contents order and additional data discriminated by the information center so that they are added to the contents from the information center; and a recording means that respectively records the contents and the additional data received by the reception means in different data recording areas of the recording medium.

[0042]

Therefore, according to the aforementioned constitutions, each terminal unit can receive and attain the contents data and the additional data added to the contents by transmitting the user ID and the contents order for designating contents to the information center.

[0043]

As mentioned above, when the received contents data and additional data are recorded on the recording medium having multiple data recording areas, the contents and the additional data are respectively stored in different data recording areas of the recording medium. In this manner,

the contents and the additional data can be suitably downloaded according to a prescribed format of the recording medium.

Constitution and operation of the invention

[0044]

Next, preferred application examples of the present invention will be explained. In a COD system that is realized according to the application examples of the present invention, various contents that are expressed mainly by musical audio data are signal-distributed to terminal units respectively accessed to an information center through a communication line by the information center.

[0045]

In the present invention, the contents signal-distributed in the COD system are not limited to musical audio data. For example, the contents can be video software or game software. However, for convenience of explanation, the COD system in the following explanation is a COD system for basically signal-distributing music.

[0046]

The preferred application examples will be described in the following sequence.

[0047]

1: COD system (first application example)

[0048]

1-1: Signal distribution of contents

[0049]

1-2: Server constitution (first embodiment example)

[0050]

1-3: Server operation (first embodiment example)

[0051]

1-4: Server constitution (second embodiment example)

[0052]

1-5: Server operation (second embodiment example)

[0053]

2: COD system (second application example)

[0054]

2-1: High-quality audio data format

[0055]

2-2: System constitution

[0056]

3: User terminal unit constitution

[0057]

4: Contents recording and regenerating operation

[0058]

1: COD system (first application example)

[0059]

1-1: Signal distribution of contents

[0060]

Figure 2 is a block diagram showing a typical constitution of a COD system, which is realized by a first application example of the present invention, and a contents signal distribution of the COD system.

[0061]

A server (1) receives contents such as video software such as music and movie and game software generated by a contents holder company (2). The server (1) converts the contents into digital data and stores the digital data as contents data.

[0062]

The server (1), for example, accesses user terminal units (5) possessed by worldwide users A, B, …, and Z through Internet (4) and can communicate with the terminal units (5).

[0063]

It must be noted that a user terminal unit (5) can be a personal computer having a function for connecting the personal computer to the Internet (4). Alternatively, a user terminal unit (5) can be a device having a function for recording data on a compatible disk type recording medium or regenerating data from the aforementioned recording medium, and the aforementioned device has a function for connecting the aforementioned device to the Internet (4).

[0064]

In addition, the communication line for connecting at least an optional user terminal unit (5) among the user terminal units (5) to the server (1) is not limited to the Internet (4). The communication line can be other public communication lines such as the ISDN, an analog telephone line, or a satellite communication line.

[0065]

In order to establish access between a user terminal unit (5) possessed by the user and the server (1), it is necessary fort the user to implement a prescribed operation so as to access the server (1) by inputting the URL (Uniform Resource Locator) allocated to the server (1), using an input device such as a mouse or a keyboard.

[0066]

In response to the access, the server (1), for example, usually transmits a contents guide showing a contents list to the user terminal unit (5) accessed to the server (1).

[0067]

In musical contents, the contents guide includes the title of a musical composition, the artist name, the genre, and the price. In video software contents, the contents guide includes the title, producer name, genre, and price. In game-software contents, the contents guide includes the game software name, producer name, and price.

[0068]

The user terminal unit (5) usually displays the contents guide received from the server (1) on a so-called browser screen. The browser screen is a GUI (Graphic User Interface) that enables implementation by the user of an operation for inputting various kinds of required input data such as data for designating or selecting desired contents.

[0069]

In other words, the user who possesses the user terminal unit (5) can select desired contents by implementing a prescribed operation procedure. After selecting the desired contents, an operation for transmitting a contents order for requesting a download of the selected contents can be implemented.

[0070]

It must be noted that the contents order originally includes a contents ID for designating desired contents. In the operation for transmitting the contents order, it is necessary for the user to input a credit card number or bank account number and an authentication code as accounting information to authenticate the user. Instead of the authentication code, the user may input an identification code of a prepaid card purchased by the user as the accounting information. A series of information input by the user is included in the contents order.

[0071]

The server (1) receives the contents order transmitted by the user terminal unit (5) through the Internet (4). Next, the server (1) authenticates the user by using the authentication code included in the contents order. If the user who has transmitted the contents order is successfully authenticated, the user is regarded as a user with the right to use a COD service.

[0072]

The server (1) stores multiple contents, which are provided from the contents holder company (2), as data. After the user is verified as a successfully authenticated user, the server (1) retrieves a contents repertoire of the contents designated by the contents ID included in the contents order.

[0073]

Next, the server (1) transmits the retrieved contents to the user terminal unit (5). The user terminal unit (5) stores the contents received from the server (1) in a recording medium for storage. In this manner, the contents are downloaded to the user terminal unit (5) from the server (1).

[0074]

In the transaction in which the contents are downloaded, the bank (3) that has executed a contract with the user pays the price of the contents purchased by the user. The payment is based on the accounting information included in the contents. As mentioned above, the accounting information can be a credit card number, bank account number, prepaid card number, etc. The money paid by the bank (3) includes earnings and operation expenses, which are generated by the company for managing the server, and earnings and manufacturing expenses which are generated by the contents holder company (2) for generating contents.

[0075]

Up to now, the basic signal distribution of contents by users in the COD system, which is realized by the first application example shown in Figure 2, has been described.

[0076]

In the COD system shown in Figure 2, if the server (1) only downloads the contents designated in the contents order, this application example is not particularly different from the example shown in Figure 1. In addition to user authentication, the server (1), which is used in this application example, can transmit not only designated contents but additional information related to the contents in accordance with the service utilization frequency of the user, which will be described later. Specifically, a service is provided as a bonus to the user in accordance with the service utilization frequency, and the contents of the service depend upon the service utilization frequency.

[0077]

The server (1) has client data (13A) including prescribed information usable for discriminating the service utilization frequency of each user who requests the server (1) to download contents.

[0078]

The client data (13A) are used to discriminate the grade of each user showing the service utilization frequency of the user. The user grade discriminated in this manner is used to typically discriminate sub data related to musical data intrinsically designated as main data. Next, the server (1) transmits the main data and the sub data as contents to the user terminal unit (5).

[0079]

In this application example, the server (1) classifies the user service utilization frequency included in the user data (13A) into three user grades. More specifically, the highest user grade is a user grade with a high propensity to consume (level of heavy-spending users), the grade after the highest user grade is a user grade with an average propensity to consume (level of normal spending users), and the lowest user grade is a user grade with a low propensity to consume (level of light-spending users). In the application example shown in Figure 2, the user A is a user with an average propensity to consume, the user B is a user with a low propensity to consume, and the user Z is a user with a high propensity to consume.

[0080]

If the server (1) receives contents from the user terminal unit (5), that is, if the user terminal unit (5) receives a contents order for music, the grade of the user who has transmitted the contents order is discriminated based on the client data (13A) and the user ID included in the contents order. Next, the contents data that will be downloaded are typically changed as follows.

[0081]

Let's assume that the user who has transmitted the contents order from the user terminal unit (5) has been discriminated as the user B as a user with a low propensity to consume. In this case, as shown in the figure, only the musical data are transmitted as contents to the user terminal unit (5). In other words, only the ordered data are transmitted without adding any sub data.

[0082]

If the user who has transmitted the contents order from the user terminal unit (5) is discriminated as the user A who is a user with an average propensity to consume, contents containing so-called jacket data are transmitted to the user terminal unit (5). The jacket data are figures showing a packet for ordered musical data. For example, the jacket figures can be displayed by regenerating the contents.

[0083]

If the user who has transmitted the contents order from the user terminal unit (5) is discriminated as the user Z who is a user with a high propensity to consume, contents containing jacket data and lyrics data are transmitted to the user terminal unit (5). The lyrics data are a kind of image data showing the text and/or lyrics with characters. With the regeneration of the lyrics data, the lyrics can be displayed. It must be noted that karaoke data instead of jacket data and

lyrics data can be included in the contents that are transmitted to the user with a high propensity to consume.

[0084]

As mentioned above, the user grade is discriminated in accordance with the service utilization frequency of the user in the server (1) that is realized by this application example. The user grade is then used to discriminate whether or not jacket and/or lyrics data are to be added to music acting as the main data. With the addition of the jacket and/or lyrics data to one music item acting as the main data, music software with value like a CD is added to the main data.

[0085]

With this constitution, the service grade, which is provided to the user according to the service utilization frequency of the user, can be calculated in the same manner as in a general market of network shopping through a network such as Internet (4). Therefore, the shopping desire of the user is increased, and the market competition between enterprises is also intensified. As a result, network shopping becomes more active.

[0086]

1-2: Server constitution (first embodiment example)

[0087]

Figure 3 is a block diagram showing a typical internal constitution of the server (1) that is used in the COD system shown in Figure 2. Typical first and second operations of the first application example will be described, and it must be noted that the internal constitution shown in Figure 3 is a constitution for a typical first operation.

[0088]

As shown in Figure 3, the server actually includes three servers, that is, main data server (11), sub data server (12), and client data server (13).

[0089]

The main data server (11) is used to store and process main data that are signal-distributed as contents. The main data server (11) includes a musical database (11A) for storing various music items in a database format.

[0090]

The sub data server (12) is used to store and process sub data that are included in the signal distribution contents. As explained above with reference to Figure 2, the sub data that are added to the musical data, which are signal-distributed as contents, can be jacket, lyrics, etc. For this reason, the sub data server (12) includes a jacket database (12A) and a lyrics database (12B).

[0091]

As shown in the figure, it must be noted that a high-quality audio information database (12C) included in the sub data server (12) is a different database that is used in the following second application example.

[0092]

Many users use a COD system that is realized by this application example. For this reason, the client data server (13) stores and processes client data (13A) that are used to control the service utilization frequencies of the users who use the COD system of this application example.

[0093]

Figure 5 conceptually shows the structure of the client data (13A).

[0094]

As shown in the figure, the client data (13A) are a set of individual service utilization frequencies for each of the users A, B, …, and Z who use the COD system by accessing the server (1). The individual utilization frequency of each user, as shown in the figure, typically includes the user ID, download times, user grade, access time, access times, and download time.

[0095]

The user ID of a user is an ID that is intrinsically allocated to the user when an initial contract is made to use the COD system that is realized by this application example.

[0096]

The download times of a user is the cumulative download operation times implemented up to now by the user.

[0097]

The user grade of a user shows the service utilization frequency of the user. The utilization frequency is provided to the user according to the previous COD-system utilization frequency of the user and a prescribed rule based on the utilization history of the user. The user grade can be typically set by using at least one of the download times or access time, access times, and download time. This setup will be described below.

[0098]

For convenience of explanation, three user grades, that is, user grades 1, 2, and 3 are provided. However, it must be noted that the number of grades is not limited to three. User grade 1 shows the highest service utilization frequency for users with a high propensity to consume as mentioned above with reference to Figure 2. User grade 2 shows the second highest service utilization frequency for users with an average propensity to consume. User grade 3 shows the lowest service utilization frequency for users with a low propensity to consume.

[0099]

The access time is a utilization history showing the cumulative time period in which the user terminal unit (5) processed by a user is accessed to the server (1). The access times of a user is a time in which the access between the user terminal unit (5) possessed by the user and the server (1) has been set up to now.

[0100]

The download time is the cumulative time required up to now for a user to download contents from the server (1).

[0101]

As mentioned above, the user grade of a user is set based on information such as the service utilization frequency of the user, that is, download times, access time, access times, and download time.

[0102]

In the typical client data (13A) shown in Figure 5, the user grade is set based on the download times. Specifically, the download times is classified into three categories separated from each other by limit values. The three download times categories are respectively related to three user grades. In the typical client data (13A) shown in Figure 5, user grade 1 is allocated to

the user Z with a download times of 200, user grade 2 is allocated to the user A with a download times of 50, and user grade 3 is allocated to the user B with a download times of 10.

[0103]

In actuality, at least one of the access times, the access time, and the download time can be used instead of the download times to set the user grade.

[0104]

For example, let's assume that the user grade is set by using only the access time. In this case, user grade 1 is allocated to the user Z with an access time of 5 h, user grade 2 is allocated to the user B with an access time of 3 h, and user grade 3 is allocated to the user A with an access time of 2.5 h.

[0105]

In this application example, if the download times is used as a reference for setting the user grade, the user B with a download times of 10 has a user grade lower than that of the user A with a download times of 50. On the other hand, if the access time is used as another reference for setting the user grade, the user B with an access time of 3 h has a user grade higher than that of that of the user A with an access time of 2.5 h. In terms of a contents sale enterprise, a user with a higher download times, that is, the user A in this case, becomes a user with a higher propensity to consume. On the other hand, in terms of a communication company, a user with a longer access time, that is, the user B in this case, becomes a user with a higher propensity to consume. It is not rare for a communication company to control contents sale enterprises. In this case, the access time can have priority over the download times.

[0106]

Needless to say, the user grade can be set by using two or more references in combination that are appropriately selected from the download times, the access times, the access time, and the download time.

[0107]

In other words, said download times, access times, access time, and download time individually showing system utilization frequencies have different meanings. Therefore, one or more information items suitable for COD control are selectively used from the download times, the access times, the access time, and the download time in consideration of the meanings.

[0108]

For example, the user with a server access time exceeding a prescribed value, even though the user has a smaller number of download times, can be regarded as a user who spends most of his time carefully looking at or reading advertisements displayed during the server access time. In response to the access time, the user grade set for this user can also be raised with an increase in the access time.

[0109]

In addition, the time required for downloading a server with a given size can also change in accordance with the congestion level of a communication line. In this case, it can be assumed that the user will carefully look at or read advertisements displayed during the download time. Therefore, the user grade can also be set in consideration of the download time.

[0110]

Let's refer to Figure 3.

[0111]

A control part (16) controls the operation of the server (1). In this application example, the control part (16) includes a discriminator (17) and a comparator (18) as functional blocks that are realized by individual software programs. The operations of the discriminator (17) and the comparator (18) will be described below.

[0112]

A synthesizer (14) generates coupled contents by implementing a process for synthesizing musical data, which are used as main data output by the main data server (11) via a switch (15), with sub data provided by the sub data server (12). The synthesizer (14) provides the aforementioned contents to a transmission/reception part (19). The transmission/reception part (19) multiplexes the main data and the sub data synthesized in the contents and transmits the contents on a time-division basis.

[0113]

The switch (15) is provided to open/close the supply of the sub data provided to the synthesizer (14) by the sub data server (12). For this reason, in this application example, the switch (15), as shown in the figure, is provided between the sub data server (12) and the synthesizer (14). The switch is opened or closed by control that is implemented by the control part (16).

[0114]

The transmission/reception part (19) is provided to implement communications between the server (1) and external devices through the Internet (4). Information provided to the server (1) through the Internet (4) is received by the transmission/reception part (19). On the other hand, information, such as mainly contents, is transmitted to other devices through the Internet (4).

[0115]

In actuality, it must be noted that the server (1) typically has a constitution capable of transmitting the aforementioned contents guide. However, the devices for implementing these functions are not shown in the figure. In other words, only the devices for implementing the function of transmitting the contents are shown in the figure.

[0116]

1-3: Server operation (first embodiment example)

[0117]

With reference to a flow chart shown in Figure 4, the operation of the server (1) with the aforementioned constitution for signal distributing the contents mentioned above with reference to Figure 2 will be described below. For convenience of explanation, it must be noted that the flow chart shown in Figure 4 shows only processing for transmitting the contents based on user grade discrimination and the discriminated user grade. For example, other processing such as user authentication is not shown in this flow chart.

[0118]

First, the transmission/reception part (19) receives a contents order through the Internet (4) from the user terminal unit (5) possessed by a user. The contents order is then transmitted to the control part (16) by a user request. At step S101, the control part (16) receives the user request.

[0119]

The received user request primarily includes the user ID required for user authentication that will be described below. At the next step S102, the user ID included in the user request is referenced.

[0120]

Next, at the next step S103, the client data (13A) stored in the client data server (13) are retrieved for individual data that are matched with the user ID referenced at step S102. Specifically, the client data (13A) stored in the client data server (13) include a user ID list that is retrieved for data that match the user ID referenced at step S102.

[0121]

During the retrieval, the control part (16) provides the user ID list to the comparator (18) that compares the user ID extracted from the user request at step S102 with each user ID of the list. If the comparison result shows that the list includes a user ID that matches the user ID extracted from the user request at step S102, the client data (13A) are retrieved for individual information related to the user ID extracted from the user request at step S102.

[0122]

Therefore, the user grade is discriminated at the next step S104. When the user grade is discriminated, the discriminator (17) acquires the individual data found from the client data server (13) by the retrieval and refers to the value of the user grade included in the individual data. If the user grade is user grade 1, the flow proceeds to step S105. If the user grade is user grade 2, the flow proceeds to step S107. If the user grade is user grade 3, the flow proceeds to step S109.

[0123]

At step S105 for user grade 1, control for closing the switch (15) is implemented so that a state in which the synthesizer (14) synthesizes musical data acting as the main data with sub data is set. Next, the flow proceeds to step S106.

[0124]

At step S106, the requested musical data are selected as main data, and sub data for user grade 1 are selected and added to the selected musical data. Next, the selected sub data are added to the desired musical data selected as the main data, generating contents. The contents generated are finally output for transmission.

[0125]

Specifically, the desired musical data are designated by the contents ID included in the user request. First, the designated musical data are found through retrieval from the musical database (11A) of the main data server (11) and are provided to the synthesizer (14). The

discriminate (17) retrieves the database (11A) for the designated musical data and implements processing for driving the main data server (11) to provide the retrieved designated musical data to the synthesizer (14).

[0126]

Next, the discriminator (17) outputs the information, which has been used to select the sub data, to the sub data server (12) to select the sub data corresponding to the information showing the user grade discriminated by the discriminator (17).

[0127]

Next, the sub data server (12) retrieves the database for the sub data corresponding to the sub data selection information. The sub data, as mentioned above, are data that are added to the designated musical data found by the main data server (11). As the condition for retrieving the database for the sub data, the retrieved sub data must be related to the musical data designated by the contents ID. For user grade 1, the sub data that are added to the designated musical data are both jacket data and lyrics data as mentioned above with reference to Figure 2. Therefore, the jacket database (12A) is first retrieved for the jacket data related to the designated musical data. Next, the lyrics database (12B) is retrieved for lyrics related to the designated musical data in the same manner.

[0128]

Therefore, the jacket data and the lyrics found by the retrieval operation are provided to the synthesizer (14) through the switch (15) set in a closed state.

[0129]

The synthesizer (14) synthesizes the musical data acting as the main data with the jacket data and the lyrics according to a prescribed format to generate contents with a transmission format based on the Internet (4). Next, the synthesizer (14) provides the generated contents to the transmission/reception part (19), and the transmission/reception part (19) transmits the contents to the requesting user terminal unit (5) through the Internet (4), finishing the processing implemented at step S106.

[0130]

At step S107 for user grade 2, control for closing the switch (15) is implemented.

[0131]

Next, at the next step S108, the requested musical data are selected as the main data, and sub data for user grade 2, which are added to the selected musical data, are selected. The sub data selected are then added to the desired musical data selected as the main data to generate contents. The generated contents are finally output for transmission.

[0132]

Specifically, the desired musical data are designated by the contents ID included in the user request. First, the designated musical data are found by retrieving the musical database (11A) of the main data server (11) at step S108 and are provided to the synthesizer (14).

[0133]

For user grade 2, the sub data, which are added to the designated musical data, are only the jacket data as mentioned above with reference to Figure 2. Therefore, the jacket database (12A) is retrieved for the jacket data related to the designated musical data. Next, the jacket data are provided to the synthesizer (14) through the switch (15) in a closed state.

[0134]

The synthesizer (14) synthesizes the musical data acting as the main data from the main data server (11) with the jacket data according to a prescribed format to generate contents with a transmission format based on the Internet (4). Next, the synthesizer (14) provides the generated contents to the transmission/reception part (19), and the transmission/reception part (19) transmits contents to the requesting user terminal unit (5) through the Internet (4).

[0135]

For user grade 3, only the musical data acting as the main data are transmitted as contents to the user terminal unit (5).

[00136]

At step S109 for user grade 3, control is implemented so that the switch (15) is opened. Next, at the next step S110, the requested musical data are selected as the main data. The musical data selected are finally output as contents for transmission. Specifically, the desired musical data are designated by the contents ID included in the user request. The musical data designated are found by retrieving the musical database (11A) of the server (11), provided to the synthesizer (14), and finally transmitted to the user terminal unit (5) through the Internet (4) by the transmission and reception part (19).

[0137]

After completion of the processing that is implemented at step S106, step S108, or step S110, the flow proceeds to step S111.

[0138]

At step S111, the client data (13A) are updated to reflect the current requested results for the contents. In other words, individual data of the user who has requested the contents are mainly updated to reflect the current service utilization frequency. Specifically, the individual data of the user who requests the contents are updated by increasing the download times and the access times by one each. In addition, the control part (16) measures the access time during which the user terminal unit (5) used in requesting the current contents is accessed to the server (1). The control part (16) also measures the download time required for downloading the contents. When the operation for downloading the contents to the user terminal unit (5) is completed, the measured access time and the measured download time are respectively added to the access time and the download time of the individual data. The user grade of the individual data is updated in accordance with the updated download times, the updated accesses times, the updated access time, or the updated download time that are used in setting the user grade.

[0139]

For example, it must be noted that if the user data (13A) include information such as the total utilization frequency of all the users, that is, information other than the individual data, the aforementioned information must be updated, if necessary.

[0140]

1-4: Server constitution (second embodiment example)

[0141]

In the first embodiment example, the content value of the contents depends on the user grade of the client data (13A). The user grade is set by using at least one of the download times, the access times, the access time, and the download time. Therefore, the user grade is set in accordance with the most suitable service utilization frequency for applications. Therefore, as a feature of the user grade of the COD system, the users can be discriminated from each other.

[0142]

However, it is predicted that a simpler processing can actually be implemented to discriminate the users from each other. In other words, the most suitable information for discriminating the users from each other can be typically selected as the service utilization frequency among the download times, the access times, the access time, and the download time of the client data (13A). The information selected is then used to discriminate the users from each other.

[0143]

In the constitution of the second embodiment example of the first application example, as mentioned above, based on information that is included in the client data (13A) and that is selected from the information respectively showing the service utilization frequencies of the users, the users are discriminated from each other, and the content value of the contents depends on the selected information.

[0144]

Figure 6 is a block diagram showing the constitution of the server (1) of the second embodiment example. The same elements as the constitutional elements used in the server (1) shown in Figure 3 are expressed by the same reference symbols, and their explanation is omitted.

[0145]

In the constitution of the server (1) shown in Figure 3, sub data are selected in accordance with the user grade. For this reason, information for selecting the sub data is provided to the sub data server (12) from the discriminator (17) that is used in the control part (16). On the other hand, in the constitution shown in Figure 6, the sub data selection information is not provided to the sub data server (12).

[0146]

1-5: Server operation (second embodiment example)

[0147]

With reference to a flow chart shown in Figure 7, as a second embodiment example, processing that is implemented by the server (1) with the constitution shown in Figure 6 will be described below. For convenience of explanation, it must be noted that the flow chart shown in Figure 7 shows only the step for discriminating the user grade and transmitting contents in

accordance with the discriminated user grade. Therefore, other processing such as user authentication is omitted.

[0148]

Since the processing that is implemented at steps S201-S203 is the same as the processing that is implemented at steps S101-S103 of the flow chart shown in Figure 4, its explanation is omitted.

[0149]

The operation flow proceeds to step S204 for discriminating whether or not the relation expression $a \geq b$ is true, where a represents download times, and b represents a download critical value. In other words, the download times a is used in discriminating whether the download times is the same as the download critical value or exceeds the critical value. The download times is an individual data item that is acquired as a retrieval result of the client data (13A) of the client data server (13).

[0150]

If the discrimination result is 'Yes,' the user is shown as a user with a high system utilization frequency. In this case, the operation flow proceeds to step S205 for implementing the control so that the switch (205) [sic; (15)] is in a closed state.

[0151]

At the next step S206, sub data related to the requested musical data are added to the requested musical data to generate contents, and the contents are then transmitted. The circuit shown in Figure 6 carries out the following operations to implement the processing at step S106 [sic; S206].

[0152]

The discriminator (17) requests that the main data server (11) retrieve the musical database (11A) for the musical data designated by the contents ID included in the user request and provides the musical data found by the retrieval to the synthesizer (14).

[0153]

Next, the sub data server (12) retrieves the database for sub data related to the musical data designated by the contents ID and provides the sub data to the synthesizer (14) through the switch (15) in a closed state.

[0154]

In the second embodiment example, three discrimination grades in accordance with the user service utilization frequency are provided instead of three user grades. Therefore, in this case, only one kind of sub data, which are added to the main data, exists typically. In case musical data are used as the main data, only one kind of sub data, that is, jacket data, exists. Alternatively, the combination of jacket data and lyrics can also be used as one kind of sub data. In the processing that is implemented at step S206, there is only one kind of sub data that are selected to be added to the main data.

[0155]

The synthesizer (14) synthesizes the sub data and the main data provided to the synthesizer (14) in the aforementioned manner according to a prescribed format to generate contents. Next, the synthesizer (14) provides the contents to the transmission/reception part (19), and the transmission/reception part (19) transmits the contents to the user terminal unit (5) that has requested the contents through the Internet (4).

[0156]

The aforementioned processing is implemented at step S206.

[0157]

On the other hand, if the discrimination result at step S204 is 'No,' the flow proceeds to step S207 for implementing processing for a user with a low system utilization frequency.

[0158]

In this case, control is implemented to open the switch (15) at step S207. Therefore, at the next step S208, the discriminator (17) requests that the main data server (11) retrieve the musical database (11A) for the musical data designated by the contents ID included in the user request and provides the musical data found by the retrieval to the transmission/reception part (19) through the synthesizer (14), so that the aforementioned musical data are transmitted. Therefore, the data transmitted to the transmission/reception part (19) through the synthesizer (14) in an open state of the switch (15) are only the musical data acting as the main data. In other words, only the musical data are transmitted as contents.

[0159]

After completion of the processing that is implemented at step S206 or step S208, the flow proceeds to step S209 for updating the client data (13A).

[0160]

Since the processing that is implemented at step S209 is the same as the processing that is implemented at step S111 of the flow chart shown in Figure 4, its explanation is omitted.

[0161]

However, in the second embodiment example, only the download times is used to discriminate the system utilization frequencies of the users. Therefore, other information such as access time, access times, and download time can be removed from the client data (13A).

[0162]

As mentioned above, only the download times is used in discriminating the system utilization frequencies of the users. However, it must be noted that the other information such as access time, access times, and download time can also be used in discriminating the system utilization frequencies of the users.

[0163]

2: COD system (second application example)

[0164]

2-1: High-quality audio data format

[0165]

Next, a second application example of the present invention will be described.

[0166]

In the aforementioned first application example, the jacket data and/or the lyrics acting as the sub data are added to the musical data as the main data, increasing the content value of the generated contents. On the other hand, in the second application example, the sub data added to the musical data as the main data, that is, audio data, improve the audio quality of the audio data that are acquired as the result of the operation for regenerating the musical data.

[0167]

With the reference to Figures 9(a)-9(c), an explanation concerning a data format, which can increase the audio quality of the audio data acting as the main data by adding sub data to the main data, will be provided first.

[0168]

Based on the audio data format applied to this application example, an analog audio signal with a waveform shown in Figure 9(a) is converted into a digital audio data item that has a sampling frequency of 88.2 kHz and generates 16 quantization bits. On the other hand, according to a recent CD format, the sampling frequency is 88.2 kHz, and 16 quantization bits are generated. Obviously, the sampling frequency fs based on the audio data format adopted in this application example is twice the sampling frequency fs based on a CD format with a sampling frequency of 44.1 kHz and 16 quantization bits.

[0169]

As shown in Figure 9(a), when the sampling frequency fs is 88.2 kHz, the time-base continuous sampling positions are N → N + 1 →N + 2 →N + 3 →N + 4 →N + 5 … For convenience of explanation, N will be expressed with an even number in the following explanation.

[0170]

As shown in Figure 9(b), only sampling positions expressed with each even number are extracted from the continuous sampling positions expressed with N →N + 1 →N + 2 →N + 3 →N + 4 →N + 5 …, and time series data expressed with N →N + 2 →N + 4 … are provided. In the time series data, a series of samples, which are acquired as the sampling operation result of the sampling frequency fs of 44.1 kHz (= 88.2 kHz/2) for generating 16 quantization bits, exist. This series of samples is digital audio data with a quality equivalent to that of data with a CD format.

[0171]

In the rest positions N + 1 → N + 3 →N + 5 …, a series of samples that are acquired as the sampling operation result of a sampling frequency fs of 44.1 kHz for generating 16 quantization bits also exists. This series of samples is also digital audio data with a quality equivalent to that of data with a CD format.

[0172]

Next, in this application example, the digital audio data shown in Figure 9(b) act as the main data, and the digital audio data shown in Figure 9(c) act as the sub data. It is evident that the digital audio data shown in Figure 9(c) can be used as the main data and the digital audio data shown in Figure 9(b) can be used as the sub data.

[0173]

In this application example, in case the digital audio data shown in Figure 9(b) act as the main data and the digital audio data shown in Figure 9(c) act as the sub data or vice versa, only the main data are transmitted as contents to a user with a low service utilization frequency, whereas the main data and the added sub data are transmitted as contents to a user with a high service utilization frequency.

[0174]

Therefore, a user who receives contents containing the main data and the sub data can regenerate the digital audio data containing the main data and the sub data in the following signal processing for regenerating the digital audio data with a sampling frequency fs of 88.2 kHz and 16 quantization bits mentioned above with reference to Figure 9(a). In other words, the user can regenerate the music with an audio quality that is higher than that of digital audio data with a format of a sampling frequency of 44.1 kHz and 16 quantization bits.

[0175]

2-2: System constitution

[0176]

On the assumption that audio data have the aforementioned format, the constitution of a COD system that is realized by the second application example will be outlined below with reference to Figure 8. The aforementioned figure is a block diagram showing the constitution of a COD system that is realized by the second application example. The same blocks as the blocks used in the COD system shown in Figure 2 are expressed with the same reference symbols, and their explanation is omitted. In the following explanation, the difference in contents in accordance with the user grade will be mainly described.

[0177]

In this case, user B is a user with a low propensity to consume or a user with grade 3. User B receives two-channel stereo audio data with a sampling frequency fs of 44.1 kHz and

16 quantization bits as contents. In other words, user B receives digit audio data containing only the main data showing the music requested by the user as contents.

[0178]

If user A acting as a user with an average propensity to consume or a user with grade 2 requests music, the server (1) transmits two-channel stereo audio data with a sampling frequency fs of 88.2 kHz and 16 quantization channels as contents in response to the aforementioned request. In other words, user A receives digital audio data containing the digital audio data shown in Figure 9(b) and the digital audio data shown in Figure 9(c) synthesized to show the music requested by the user as contents.

[0179]

If user Z acting as a user with a high propensity to consume or a user with grade 1 requests music, the server (1) transmits four-channel stereo audio data with a sampling frequency fs of 88.2 kHz and 16 quantization bits as contents in response to the aforementioned request. In other words, user Z not only receives digital audio data containing the digital audio data acting as the main data shown in Figure 9(b) and the digital audio data added to the main data as the sub data shown in Figure 9(c) as contents but also receives two-channel stereo audio data with a sampling frequency of fs of 88.2 kHz and 16 quantization bits as additional sub data. The four-channel audio data typically provide grandeur, thus allowing the user to obtain more preferable audio quality compared with two-channel stereo audio data with a sampling frequency fs of 88.2 kHz and 16 quantization bits.

[0180]

The constitution and operation of the server (1) for this COD system, for example, are the same as those of the first embodiment example shown in Figures 3 and 4, respectively. However, the digital audio data stored in the high-quality audio information database (12C) of the sub data server (12) are used as the sub data.

[0181]

In other words, the music expressed with the digital audio data shown in Figure 9(b) is stored in the musical database (11A) of the main data server (11). On the other hand, the music expressed with the digital audio data shown in Figure 9(c) is stored in the high-quality audio information database (12C) of the sub data server (12). In addition, the two-channel audio data with a sampling frequency fs of 88.2 kHz and 16 quantization bits are stored so that the data are

used to generate four-channel stereo audio data with a sampling frequency fs of 88.2 kHz and 16 quantization bits for users with a high propensity to consume.

[0182]

It must be noted that a simple COD system can be acquired by respectively applying the constitution and operation of the second embodiment example shown in Figures 6 and 7 to the second application example.

[0183]

3: User terminal unit constitution

[0184]

A typical constitution of a user terminal unit (5) possessed by a user in the COD system, which is realized by the application examples, will be described below with reference to Figure 10. The user terminal unit (5) shown in Figure 10 is realized by a personal computer having a function for connecting the personal computer to the Internet (4).

[0185]

In the constitution shown in the figure, a CPU (101) implements various kinds of processing by implementing various programs stored in ROM (102).

[0186]

RAM (103) is used in storing data, programs, and other information required for implementing various kinds of processing by the CPU (101).

[0187]

An I/O interface unit (104) is connected to a keyboard (105) and a mouse (106). Signals generated by the keyboard (105) and the mouse (106) are provided to the CPU (101). In addition, the I/O interface unit (104) is connected to a hard/disk drive (HDD) (108) including a hard disk that is used as a recording medium. The CPU (101) can record data, programs, and other information through the I/O interface unit (104) on the hard disk included in the HDD (108) or can retrieve data, programs, and other information from the hard disk.

[0188]

The I/O interface unit (104) is also connected to a display monitor (107) for display of images.

[0189]

A media driver (109) is a driver for a specific type of medium. The media driver (109) reads data out of a medium, or records data in the medium.

[0190]

The main data and the sub data as contents in this application example can be recorded in disks (20, 20A) with the following formats. The media driver (109) provided by this application example is constituted so that it can record data in the disks (20, 20A) or can regenerate data from the disks (20, 20A).

[0191]

A communication interface unit (110) is an interface for implementing communications between the user terminal unit (5) and the Internet (4). For example, if the user terminal unit (5) is accessed to the Internet (4) through a communication line, the communication interface unit (110) includes a modem, etc. On the other hand, if the user terminal unit (5) is accessed to the Internet (4) by a network, the communication interface unit (110) is an Ethernet interface.

[0192]

A data interface unit (111) is an interface for implementing communications between external peripheral devices based on representative interface standards such as SCSI (Small Computer Serial Interface), USB (Universal Standard Bus), and IEEE (Institute of Electrical and Electronic Engineers) 1394 and the user terminal unit (5).

[0193]

It must be noted that the disk driver capable of recording data in the disks (20, 20A) or regenerating data from the disks (20, 20A) can be accessed as an external peripheral device for the user terminal device (5) through the data interface unit (111).

[0194]

An internal bus (112) is typically a local bus or PCI (Peripheral Component Interconnect) bus for interconnecting internal function units.

[0195]

4: Contents recording and regenerating operations

[0196]

If disk type recording media with the following formats are used as recording media for recording contents, recording and regenerating operations in which contents divided into main data and sub data are respectively more efficiently usable can be carried out. However, it must be noted that the formats of the recording media are not particularly limited to the following formats.

[0197]

Figure 11(a) shows a disk (20) compatible with the contents provided by these application examples. The disk (20) is a disk in which data can be recorded and regenerated. It must be noted that the disk recording technique is not particularly mentioned in detail. However, in the current state of this technical field, a rerecording type recording method such as a photomagnetic technique or phase change technique can be adopted. In addition, an addition type recording technique such as a recording method using an organic plastidial film can also be adopted. A recording method using an organic plastidial film is typically adopted for a CD-R.

[0198]

The disk (20) is divided into multiple recording areas placed in the radial direction of the disk (20). The typical disk (20) shown in the figure is divided into a first inner recording area (21) and a second outer recording area (22).

[0199]

The main data and the sub data constituting the contents according to these application examples are respectively recorded in the first recording area (21) and the second recording area (22) of the disk (20).

[0200]

However, it must be noted that the sub data and the main data can also be respectively, oppositely recorded in the first recoding area (21) and the second recording area (22) of the disk (20). In addition, each piece of the sub data recorded in the second recording area (22) is related to the pieces of the main data recorded in the first recording area (21) according to a prescribed regulation of management information recorded in a prescribed recording area of the disk (20). Here, detailed items of the related information and the management information] will not be described.

[0201]

As mentioned above, multiple recording areas for recording different types of data are provided on one disk. The main data are recorded in a recording area that is different from the recording area for recording the sub data.

[0202]

Figure 11(b) shows the differently realized predictable disk (20A). The disk (20A) is also used in recording the main data and the sub data constituting the contents according to these application examples.

[0203]

Instead of being divided into multiple recording areas that are provided on the same recording surface, the disk (20A) shown in Figure 11(b) has a first recording layer (31) and a second recording layer (32) respectively acting as layers, that is, signal surfaces. Typically, the first and second recording layers (31, 32) are respectively used in recording the main data and the sub data. In addition, in this case, it must be noted that the first and second recording layers (31, 32) can be respectively, oppositely used in recording the sub data and the main data.

[0204]

If the disks mentioned above with reference to Figures 11(a) and 11(b) are provided, the user terminal unit (5) implements the following operations for recording and regenerating contents.

[0205]

For convenience of explanation, it must be noted that it is assumed that the disk (20) shown in Figure 11(a) is used in the following explanation.

[0206]

In addition, the following explanation shows the case where two-channel audio data with a sampling frequency fs of 88.2 kHz and 16 quantization bits are transmitted as contents according to the second application example. In other words, the main data of the contents are two-channel audio data with a sampling frequency fs of 44.1 kHz and 16 quantization bits, and the sub data of the contents are also two-channel audio data with a sampling frequency fs of 44.1 kHz and 16 quantization bits.

[0207]

In the user terminal unit (5), the contents transmitted to the user terminal unit (5) from the server (1) are received through the communication interface unit (110) under control of the CPU (101).

[0208]

The contents include two kinds of data, that is, two-channel main data with a sampling frequency fs of 44.1 kHz and 16 quantization bits and two-channel sub data with a sampling frequency fs of 44.1 kHz and 16 quantization bits. While the contents received through the communication interface unit (110) are typically, temporarily stored in the RAM (103), the CPU (101) controls the driver (109) so that the contents stored in the RAM (103) are recorded in the disk (20) mounted in the media driver (109).

[0209]

Specifically, the two-channel main data with a sampling frequency fs of 44.1 kHz and 16 quantization bits are recorded in the first recording area (21), and the two-channel sub data with a sampling frequency fs of 44.1 kHz and 16 quantization bits are recorded in the second recording area (22). In this case, it must be noted that the main data and the sub data are recorded in the disk (20) in the manner dependent on the transmission format of the data. For example, the sub data can also be recorded after the main data are recorded. Alternatively, the main data and the sub data can also be recorded as prescribed data units in an intermittent manner.

[0210]

The operation for regenerating the contents recorded as mentioned above is typically carried out as shown in Figures 12(a)-12(c).

[0211]

In the aforementioned recording operation, as shown in Figure 12(a), the two-channel main data with a sampling frequency fs of 44.1 kHz and 16 quantization bits are recorded in the first recording area (21), and the two-channel sub data with a sampling frequency fs of 44.1 kHz and 16 quantization bits are recorded in the second recording area (22).

[0212]

Next, the main data and the sub data are respectively read out of the first recording area (21) and the second recording area (22) at a prescribed time and typically stored in a memory conceptually shown in Figure 12(b).

[0213]

In other words, since the main data, as shown in Figure 9(b), are sequentially arranged at time-base positions N → N + 2 → N + 4 …, samples of the main data are sequentially stored at continuous addresses in the main data area of the memory corresponding to each position. In the same manner, since the sub data, as shown in Figure 9(c), are sequentially arranged at time-base positions N +1 → N + 3 → N + 5 …, the samples of the sub data are sequentially stored at continuous addresses in a different main data area of the memory corresponding to each position.

[0214]

The samples (or data units) stored in the memory shown in Figure 12(b) are sequentially read out of the continuous addresses in a circled number sequence shown in Figure 12(b). This sequence shows that the data units as each sample unit are read out in an alternate fashion between the main data and the sub data. The operation for reading out the data units in this manner generates sequentially arranged samples at sampling positions N → N +1 → N + 2 → N + 3 → N + 4 → N + 5 … as shown in Figure 12(c). This sample array is a high-quality audio/two-channel digital audio data with a sampling frequency fs of 88.2 kHz and 16 quantization bits based on the format shown in Figure 9(a).

[0215]

Next, as show in Figure 12(c), the sample array acquired as the readout operation result is regenerated at a data transmission speed corresponding to the sampling frequency fs of 88.2 kHz and undergoes D/A conversion corresponding to 16 quantization bits, generating a regenerative sound with an audio quality that is higher than that of the CD format, for instance.

[0216]

Let's assume that the regenerating operation is carried out by the user terminal unit (5) shown in Figure 10. In this case, the CPU (101), as mentioned above, reads the main data and the sub data out of the disk (20) mounted in the media driver (109) and implements control so that the data units are stored in the RAM (103) with a layout as shown in Figure 12(b), for instance.

[0217]

Next, the CPU (101) controls the readout addresses of the RAM (103) so that the data units are sequentially read out in the sequence mentioned above with reference to Figure 12(b), generating digital audio data with the format shown in Figure 12(c). The digital audio data then undergo a signal processing and are provided to the media driver (109) through the I/O interface

unit (104). The audio signals acquired as the signal processing result are finally output to a speaker attached to the display monitor (107).

[0218]

In a portable audio regenerating device with a flash memory, etc., it is predicted that the audio data obtained with the format shown in Figure 12(c) can also be transmitted through the data interface unit (111).

[0219]

If a disk drive especially designed to drive a disk with a CD format, though it is incompatible with the disk (20), is used to regenerate data from the disk (20) or to record data in the disk (20), the second recording area (22) is not recognized. Since only the first recording area (21) is recognized as a signal recording surface, the same recording and/or regenerating operations as those of the disk with a CD format are carried out.

[0220]

In other words, the disk (20) of these application examples has a format in which compatibility with the current CD format is considered. In addition, this compatibility maintains the true value of the disk (20A) shown in Figure 11(b). Specifically, if a disk drive especially designated to drive a disk with a CD format is used to regenerate data from the disk (20A) or to record data in the disk (20A), the second recording layer (32) is not recognized. Since only the first recording layer (31) is recognized as a signal recording surface, the same recording and/or regenerating operations as those of a disk with a CD format are carried out.

[0221]

As mentioned above, high-quality audio/two-channel digital audio data with a sampling frequency fs of 88.2 kHz and 16 quantization bits are transmitted as contents to a user with an average propensity to consume in the second application example shown in Figure 8. In other words, the contents include two-channel main data with a sampling frequency fs of 44.1 kHz and 16 quantization bits and two-channel sub data with a sampling frequency fs of 44.1 kHz and 16 quantization bits.

[0222]

However, it must be noted that the recording and regenerating operations for the aforementioned disk (20) can also be applied to contents for a user with a high propensity to consume or four-channel audio data with a sampling frequency fs of 88.2 kHz and

16 quantization bits in the second application example shown in Figure 8. The reason for this is that the disk (20) includes the first recording area (21) for recording two-channel digital audio data with a sampling frequency fs of 88.2 kHz and 16 quantization bits acting as the main data and the second recording area (22) for recording two-channel sub data with a sampling frequency fs of 88.2 kHz and 16 quantization bits acting as the sub data.

[0223]

In addition, the operation for recording data in the disk (20) can also be applied to the first application example shown in Figure 2 as well as the second application example shown in Figure 8.

[0224]

In other words, in the disk (20), the first recording area (21) is used in recording musical data acting as the main data, and the second recording area is used in recording the sub data such as jacket data or lyrics.

[0225]

Moreover, the recording and regenerating operations of the disk (20) can also be applied to the disk (20A) shown in Figure 11(b). Specifically, the recording and regenerating operations of the first recording area (21) and the second recording area (22) of the disk (20) can be respectively applied to the first recording layer (31) and the second recording layer (32) of the disk (20A).

[0226]

In the first application example, the sub data are typically jacket data or lyrics data. In addition, various kinds of other predictable information items are added to music acting as the main data, thus enabling an increase in the content value of the contents. Examples of other information that is usable as the sub data are the URL (Uniform Resource Location) and jacket comment notes for an artist related to the music.

[00227]

Furthermore, the contents can also include sub data as a combination of the sub data of the first application example and the sub data of the second application example and the main data. For example the contents can also include sub data containing two-channel digital audio data with a sampling frequency fs of 44.1 kHz and 16 quantization bits for improving the audio

quality as well as two-channel digital audio data with a sampling frequency fs of 44.1 kHz and 16 quantization bits acting as the main data and the jacket data and/or lyrics.

[0228]

As mentioned above, the sub data are added to the main data of the contents to improve the audio quality of the contents. As another method for changing the audio quality, digital audio data are compressed at different compression rates (compressibility factors) according to a prescribed technique.

[0229]

As mentioned above, when the service utilization frequency exceeds a prescribed value, sub data related to the main data, which are downloaded, are transmitted to the user terminal unit (5). Alternatively, when the service utilization frequency exceeds a prescribed value, sub data related to the main data already downloaded in the past are transmitted to the user terminal unit (5).

[0230]

In addition, the main data of the present invention are not limited only to musical data. The main data can also be dynamic image data such as video software or static image data. The predictable sub data related to the aforementioned main data can be image sub data for reinforcing the resolution of images by interpolating the image data acting as the main data.

[0231]

As another alternative, image data can be transmitted at a compression rate dependent on the service utilization frequency, or so-called wide-screen image data with a screen ratio dependent on the service utilization frequency can also be transmitted. In other words, images with high audio quality or images with high image quality are transmitted to a user with a high service utilization frequency.

[0232]

In a movie supplied as contents, the transmission method of a story to a user can depend on the service utilization frequency. As another alternative, a scene cut out by a producer or director can be added to the supplied movie as a bonus to a user with a high propensity to consume.

[0233]

Moreover, it is predicted that the main data can be program data of a game. It is predicted that the sub data related to these main data can typically be sub data such as programs for increasing the number of characters, etc., appearing in a game by adding the number of story branches of the game or data. In other words, the sub data are added, thus allowing the game to be more varied and more interesting.

[0234]

Furthermore, the COD system of the present invention is not limited only to the constitutions of the aforementioned first application example and second application example. In other words, these application examples can be appropriately modified and changed.

[0235]

For example, in these application examples, a user possesses a personal computer, which is operated as the user terminal unit (5), and operates the personal computer. However, it must be noted that public terminal units, which are installed in shops and accessed to the server (1) through a dedicated communication line, can be used instead of a personal computer.

[0236]

As mentioned above, according to the present invention, when a user requests contents, the server or information center transmits only the main data as the requested contents according to information intrinsic to the user and the user ID included in the request or transmits the main data along with sub data as the requested contents.

[0237]

The sub data transmitted along with the main data are used in changing the content value of the contents in accordance with the service utilization frequency, etc., of the user appearing in the information intrinsic to the user.

[0238]

In the embodiment of this system, different services can be provided in accordance with the service utilization frequencies of the users. More specifically, a method adopted in a general market can be employed to provide good services to the users with a high service utilization frequency for Internet shopping, etc. As a result, the market can be more active.

[0239]

In addition, the user terminal unit of the present invention can be used in downloading contents (main data) and additional data related to the main data from the information center and respectively storing the main data and the additional data in different data recording areas of the recording medium.

[0240]

For example, in a conventional regenerating device, only the main data can be regenerated from a recording area of a recording medium. However, if a regeneration system based on the format of the recording area is employed, only the main data can be regenerated from the recording areas of the recording medium, or both the main data and the sub data can be regenerated from the recording areas of the recording medium. In other words, the recording medium of the present invention is compatible with a conventional regenerating device and not only can be used in recording contents but can be used in regenerating contents according to the present invention. The regeneration system based on the format of the recording medium can efficiently record and regenerate signal-distributed contents according to the present invention. Since the present invention is also more universal, users can use current regenerating devices, etc.

[0241]

Preferred application examples of the present invention have been described using specific terms, however their description is only for the purpose of explanation. It can be understood that the present invention can be changed and modified within the principle or scope of the following [sic] claims.

Effect of the invention

[0242]

According to the present invention, when a user requests contents, a server or information center transmits only the main data as the requested contents according to information intrinsic to the user and the user ID included in the request or transmits the main data along with sub data as the requested contents.

[0243]

The sub data transmitted along with the main data are used in changing the content value of the contents in accordance with the service utilization frequency, etc., of the user appearing in the information intrinsic to the user.

[0244]

In embodiment of this system, different services can be provided in accordance with the service utilization frequencies of the users. More specifically, a method adopted in a general market can be employed to provide good services to the users with a high service utilization frequency for Internet shopping, etc. As a result, the market can be more active.

[0245]

In addition, the user terminal unit of the present invention can be used in downloading contents (main data) and additional data related to the main data from an information center and respectively storing the main data and the additional data in different data recording areas of a recording medium.

[0246]

For example, in a conventional regenerating device, only the main data can be regenerated from a recording area of a recording medium. However, if a regeneration system based on the format of the recording area is employed, only the main data can be regenerated from the recording areas of the recording medium, or both the main data and the sub data can be regenerated from the recording areas of the recording medium. In other words, the recording medium of the present invention is compatible with a conventional regenerating device and not only can be used in recording contents but can be used in regenerating contents according to the present invention. The regeneration system based on the format of the recording medium can efficiently record and regenerate signal-distributed contents according to the present invention. Since the present invention is also more universal, users can use current regenerating devices, etc.

Brief description of the figures

0001]

Figure 1 shows an outlined constitution of a conventional COD system.

Figure 2 shows an outlined constitution of the COD system that is realized by a first application example of the present invention.

Figure 3 is a block diagram showing a first embodiment example of the server (1) that is used in the COD system shown in Figure 2.

Figure 4 is a flow chart showing a processing procedure that is implemented by the first application example of the server (1) of the present invention.

Figure 5 is a client data table that is managed by the client data server (13) that is used in the server (1) that is used in the COD system shown in Figure 2.

Figure 6 is a block diagram showing a second embodiment example of the server (1) that is used in the COD system shown in Figure 2.

Figure 7 is a flow chart showing a processing procedure that is implemented by a second application example of the server (1) of the present invention.

Figure 8 shows an outlined constitution of the COD system that is realized by the second application example of the present invention.

Figure 9 shows the format of digital audio data with high tone quality corresponding to the application examples of the present invention. Figure 9(a) is a waveform diagram showing an analog data signal sampled at a sampling frequency of 88.2 kHz, Figure 9(b) shows an array of data samples positioned at even number positions, and Figure 9(c) shows an array of data samples positioned at odd number positions.

Figure 10 is a detailed block diagram showing the constitution of the user terminal unit (5).

Figure 11 shows first and second embodiment example models of disks applied to the present invention.

Figure 12 is an illustrative diagram showing a regeneration processing of contents data recorded in a disk corresponding to the application examples of the present invention. Figure 12(a) shows a first embodiment example model of the disk applied to the present invention, Figure 12(b) shows a model of a memory for storing data regenerated from the disk shown in Figure 12(a), and Figure 12(c) shows a data stream read out of the memory shown in Figure 12(b).

Explanation of symbols of the main parts of the figures

1	Server
3	Bank
4	Internet
5	User terminal unit
13A	Client data
14	Synthesizer
15	Switch
16	Control part
17	Discriminator
19	Transmission/reception part

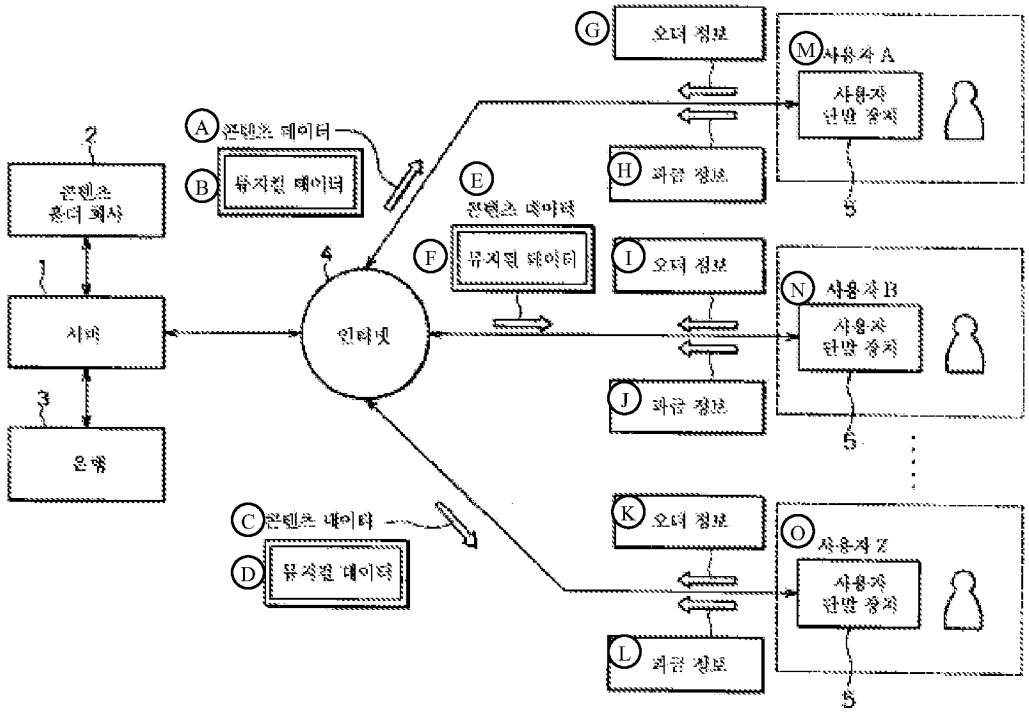

Figure 1

Key:

1	Server
2	Contents holder company
3	Bank
4	Internet
5	User terminal unit
A	Contents data
B	Musical data
C	Contents data
D	Musical data
E	Contents data
F	Musical data
G	Order information
H	Accounting information
I	Order information
J	Accounting information
K	Order information
L	Accounting information
M	User A
N	User B

O User Z

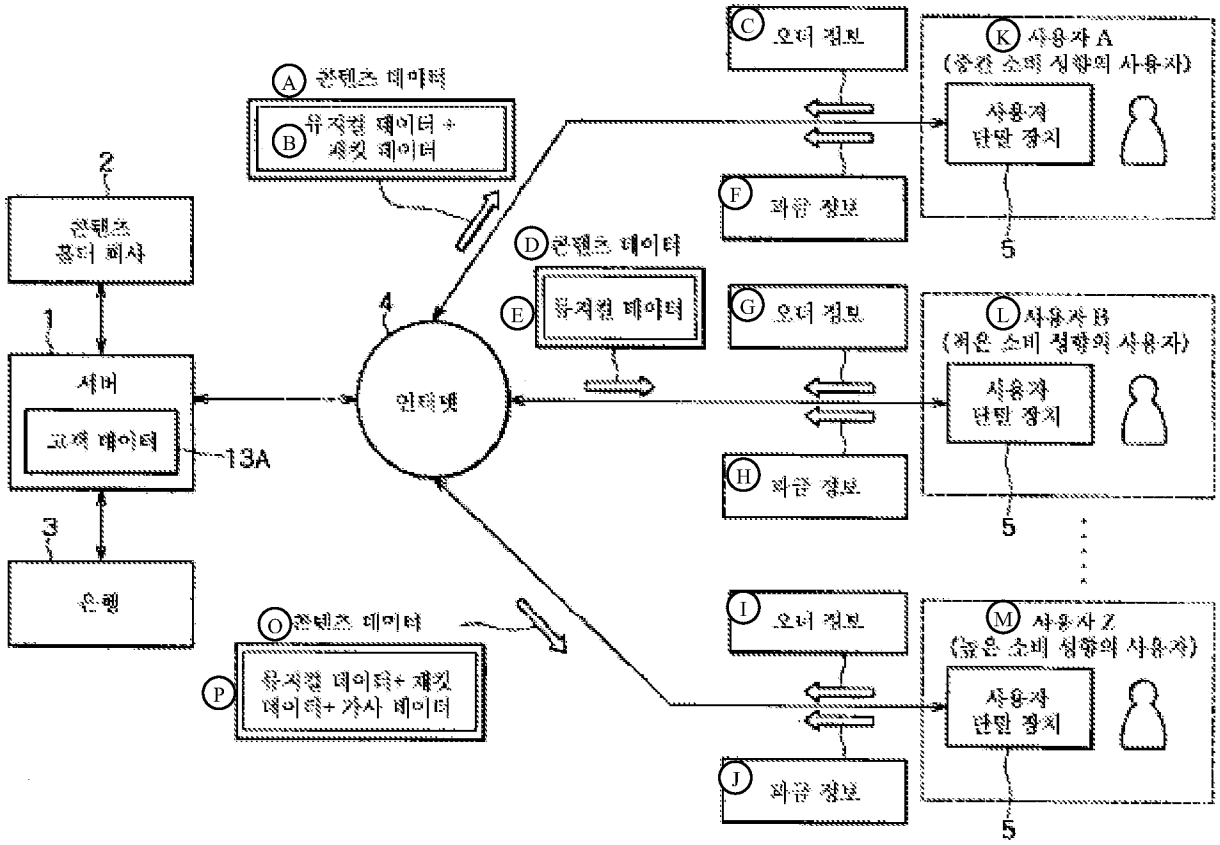

Figure 2

Key:
1 Server
2 Contents holder company
3 Bank
4 Internet
5 User terminal unit
13A Client data
A Contents data
B Musical data + jacket data
C Order information
D Contents data
E Musical data
F Accounting information
G Order information
H Accounting information

I	Order information
J	Accounting information
K	User A (user with average propensity to consume)
L	User B (user with low propensity to consume)
M	User Z (user with high propensity to consume)
O	Contents data
P	Musical data + jacket data + lyrics data

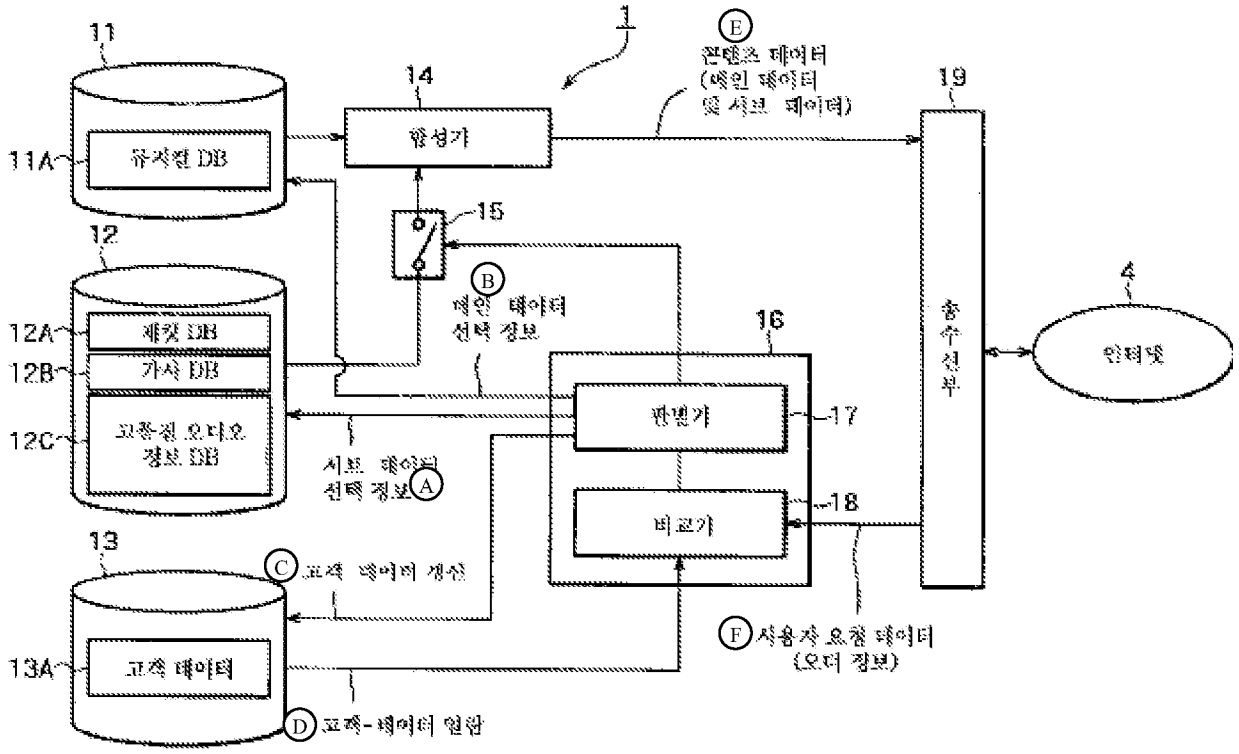

Figure 3

Key:

4	Internet
11A	Musical DB
12A	Jacket DB
12B	Lyrics DB
12C	High-quality audio information DB
13A	Client data
14	Synthesizer
17	Discriminator
18	Comparator
19	Transmission/reception part

A Sub data selection information
B Main data selection information
C Client data update
D Client-data look-up
E Contents data (main data and sub data)
F User request data (order information)

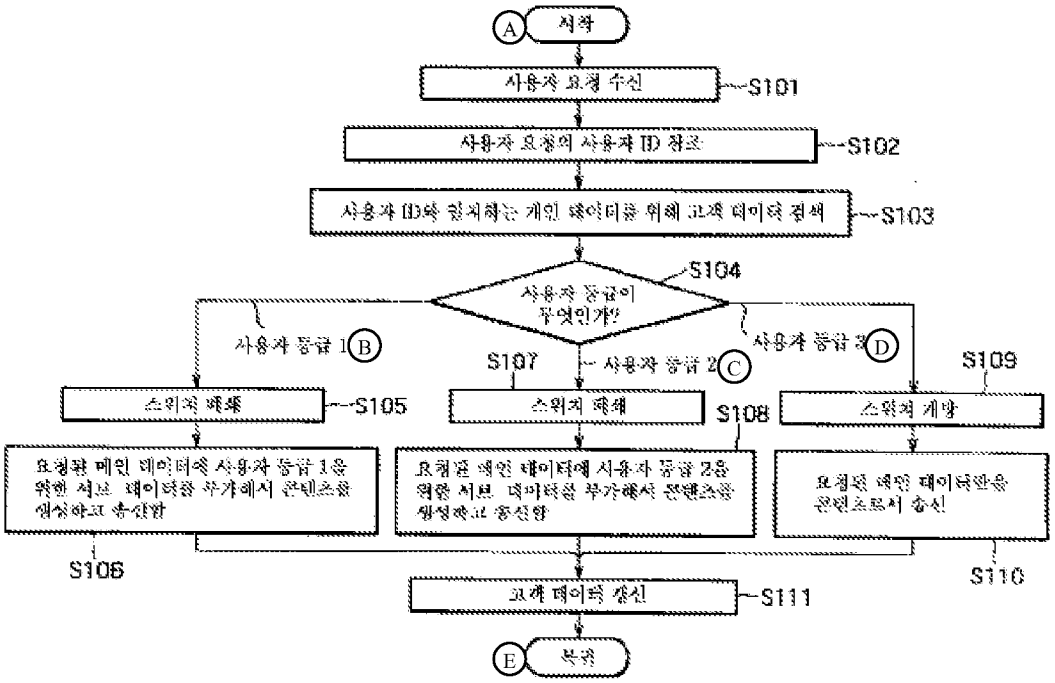

Figure 4

Key: S101 User request reception
S102 Referencing user ID of user request
S103 Client data retrieval for individual data matching the user ID
S104 What is the user grade?
S105 Switch close
S106 Contents are generated by adding sub data for user grade 1 to the requested main data and are transmitted.
S107 Switch close
S108 Contents are generated by adding sub data for user grade 2 to the requested main data and are transmitted.
S109 Switch open
S110 Only the requested main data are transmitted as contents.

S111 Client data update

A Start

B User grade 1

C User grade 2

D User grade 3

E Return

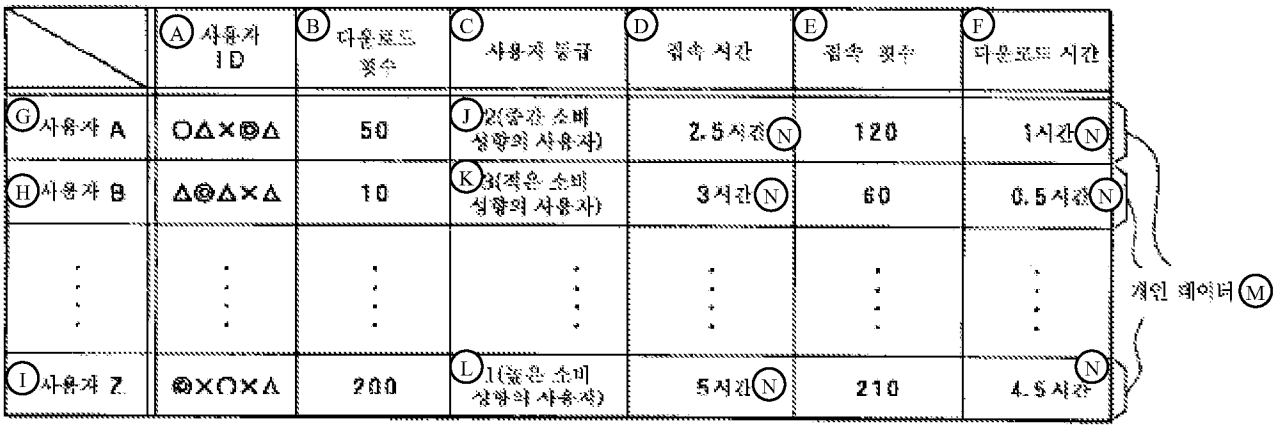

Figure 5

Key: A User ID

B Download times

C User grade

D Access time

E Access times

F Download time

G User A

H User B

I User Z

J 2 (user with average propensity to consume)

K 3 (user with low propensity to consume)

L 1 (user with high propensity to consume)

M Individual data

N __ h

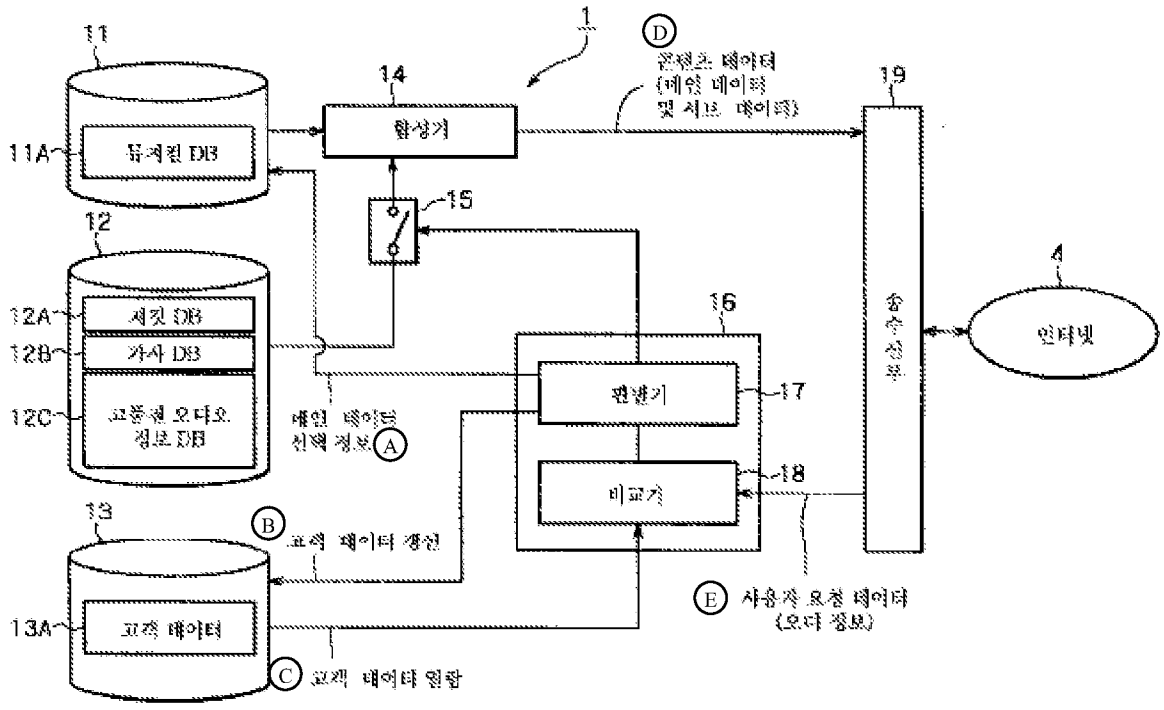

Figure 6

Key:
- 4 Internet
- 11A Musical DB
- 12A Jacket DB
- 12B Lyrics DB
- 12C High-quality audio information DB
- 13A Client data
- 14 Synthesizer
- 17 Discriminator
- 18 Comparator
- 19 Transmission/reception part
- A Main data selection information
- B Client data update
- C Client-data look-up
- D Contents data (main data and sub data)
- E User request data (order information)

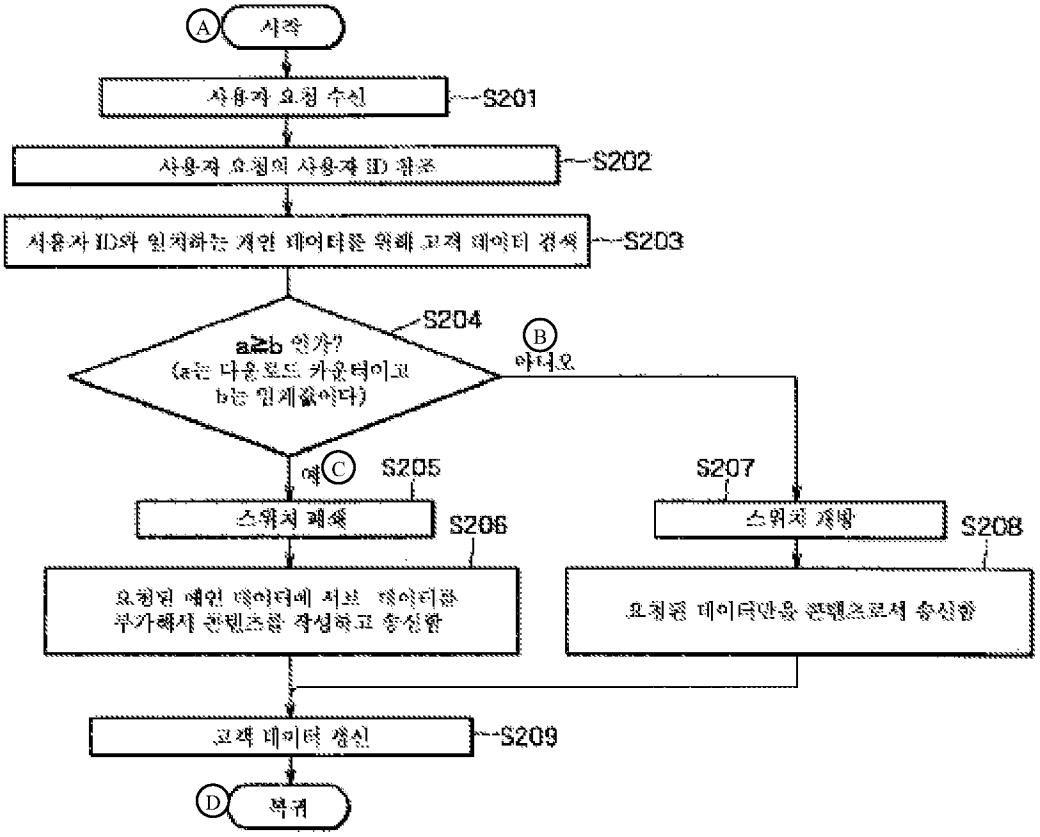

Figure 7

Key:
- S201 User request reception
- S202 Reference user ID of user request
- S203 Client data retrieval for individual data matching the user ID
- S204 a ≥ b? (a represents a download counter, and b represents a critical value.)
- S205 Switch close
- S206 Contents are prepared by adding sub data to the requested main data and then transmitted.
- S207 Switch open
- S208 Only the requested data are transmitted as contents.
- S209 Client data update
- A Start
- B No
- C Yes
- D Return

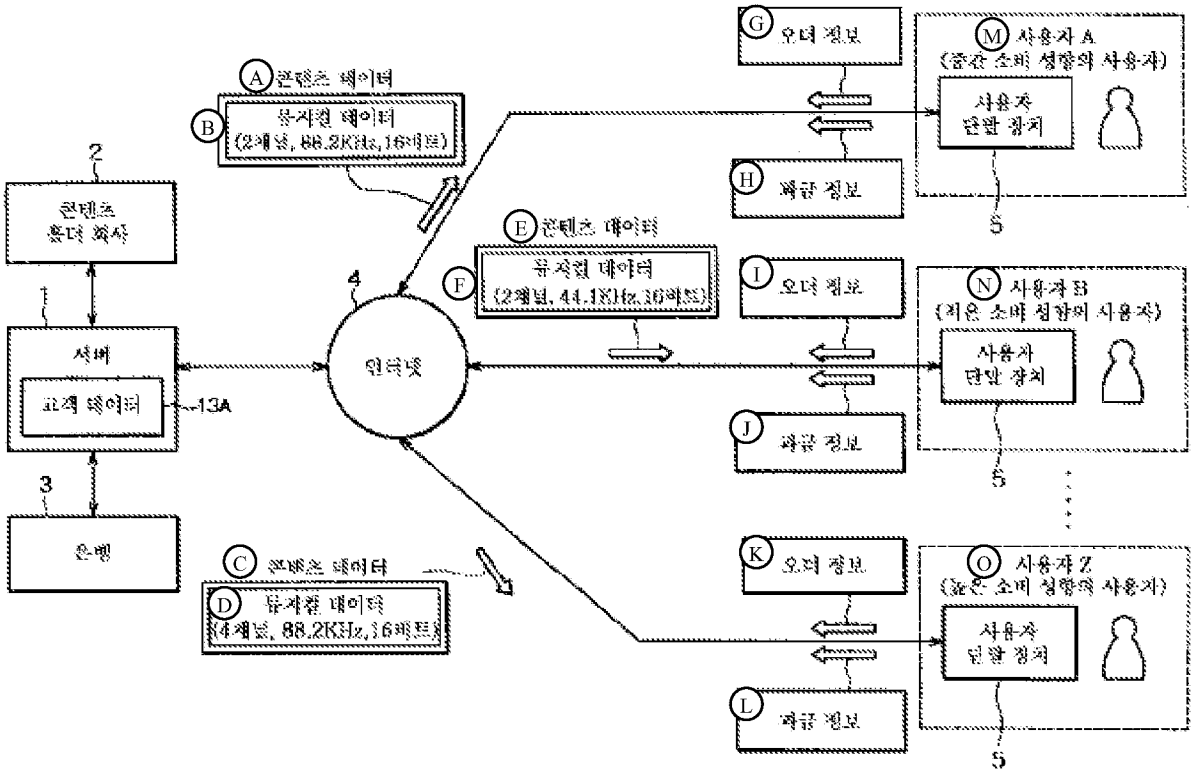

Figure 8

Key:
1 Server
2 Contents holder company
3 Bank
4 Internet
5 User terminal unit
13A Client data
A Contents data
B Musical data (2 channels, 88.2 kHz, 16 bits)
C Contents data (4 channels, 88.2 kHz, 16 bits)
E Contents data
F Musical data (2 channels, 44.1 kHz, 16 bits)
G Order information
H Accounting information
I Order information
J Accounting information
K Order information
L Accounting information
M User A (user with average propensity to consume)

N User B (user with low propensity to consume)

O User Z (user with high propensity to consume)

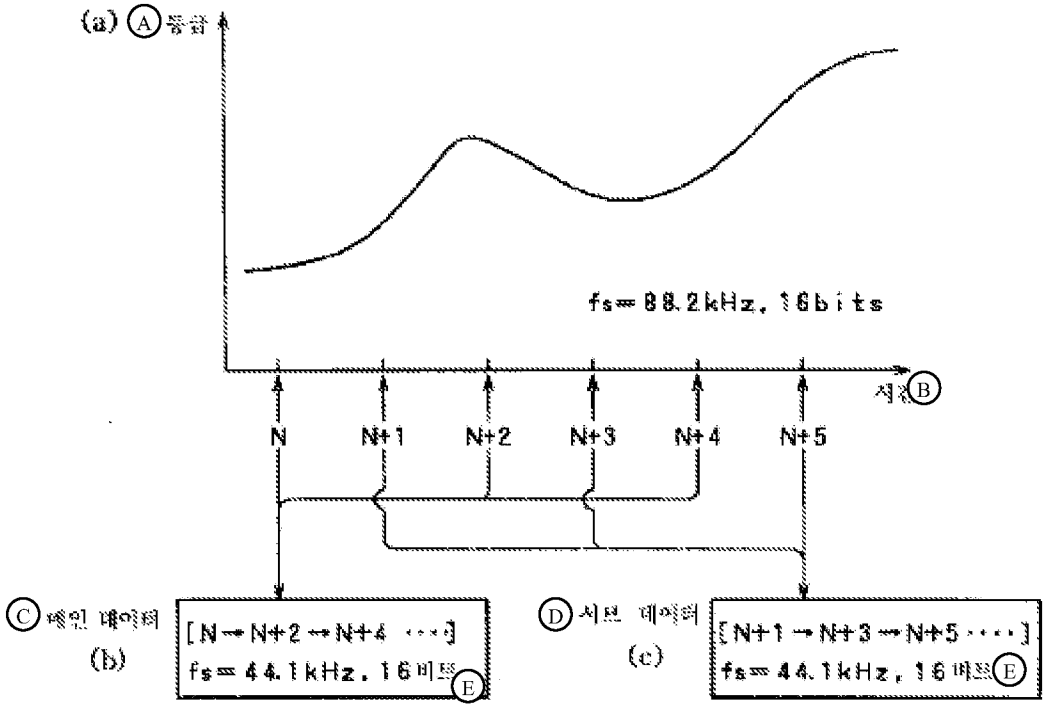

Figure 9

Key: A Grade

B Time

C Main data

D Sub data

E 16 bits

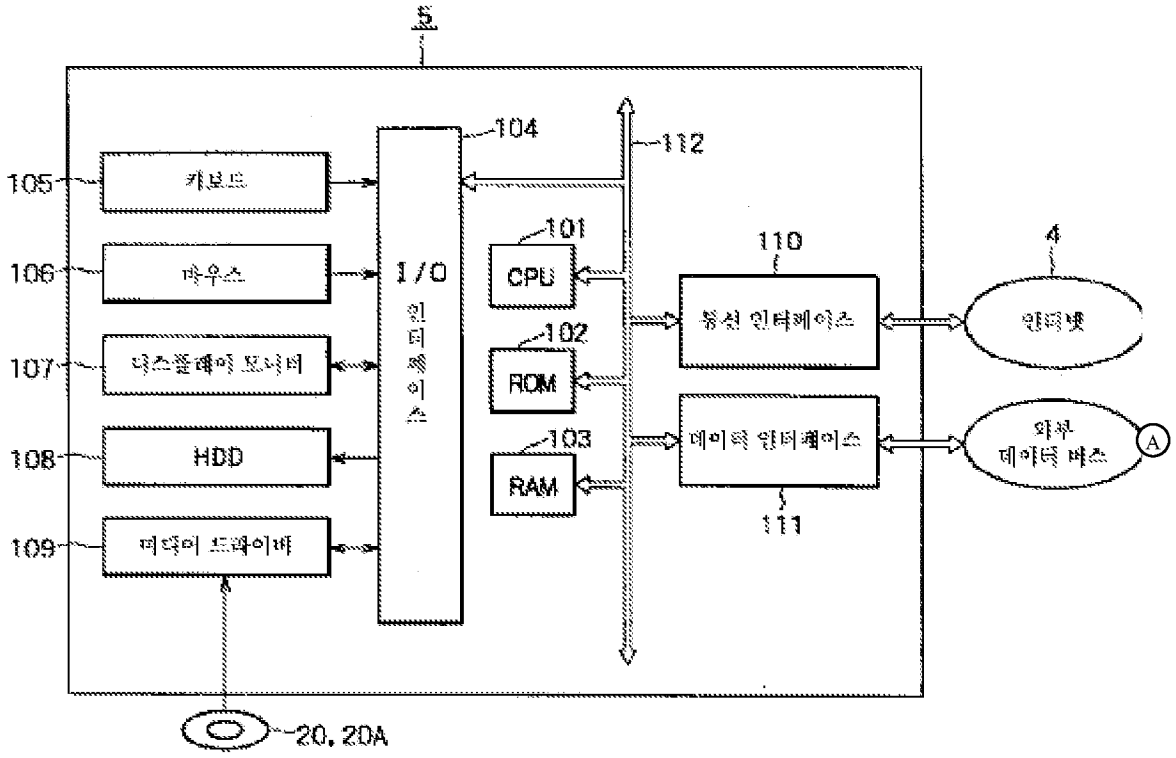

Figure 10

Key:
- 4 Internet
- 104 I/O interface
- 105 Keyboard
- 106 Mouse
- 107 Display monitor
- 109 Media driver
- 110 Communication interface
- 111 Data interface
- A External data bus

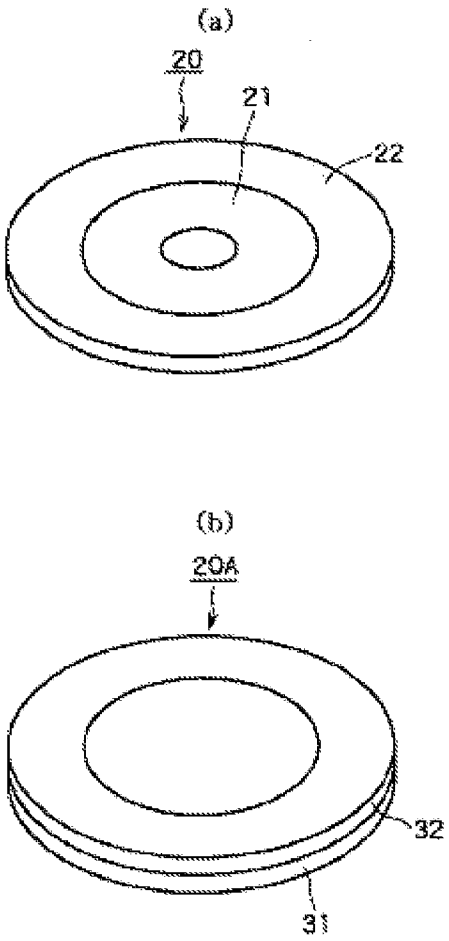

Figure 11

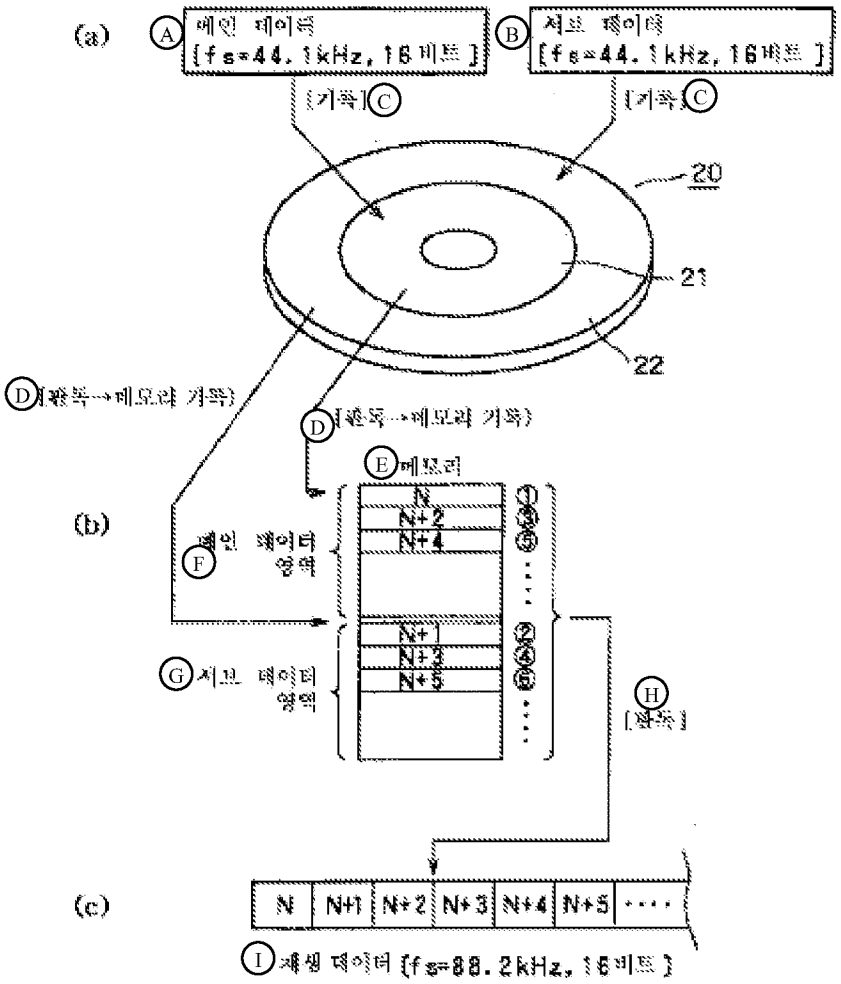

Figure 12

Key:
- A Main data (fs = 44.1 kHz, 16 bits)
- B Sub data (fs = 44.1 kHz, 16 bits)
- C Recording
- D Read → memory record
- E Memory
- F Main data area
- G Sub data area
- H Read
- I Regenerated data (fs = 88.2 kHz, 16 bits)